

## CLAIMS

1. An anti-inflammatory compound comprising the structure:

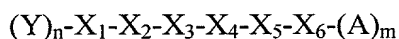


- 5 wherein  $X_a$  is a membrane translocation domain comprising from 6 to 15 amino acid residues; and  $X_b$  is a NEMO binding sequence.

2. The anti-inflammatory compound of claim 1, further comprising a modifying group.

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3. The anti-inflammatory compound of claim 1, wherein  $X_b$  consists of the following structure:



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wherein

$n$  and  $m$  are each, independently, 0 or 1;

$A$  and  $Y$  each comprises from 1 to about 3 amino acid residues;

$X_1$  is L, A, I or nor-leucine (Nle);

- 20  $X_2$  is D, E, N, Q, homoserine (Hser) or 2-ketopropylalanine (2-ketopropyl-A);

$X_3$  is W, F Y, 4-biphenyl-alanine (Bpa), homophenylalanine (Hphe), 2-Naphthylalanine (2-Nal), 1-Naphthylalanine (1-Nal), or cyclohexyl-alanine (Cha);

$X_4$  is S, A, E, L, T, nor-leucine (Nle), or homoserine (Hser);

$X_5$  is W, H, homophenylalanine (Hphe), 2-Naphthylalanine (2-Nal), 1-

- 25 Naphthylalanine (1-Nal), O-benzyl serine (SeroBn), or 3-Pyridylalanine (3-Pal); and

$X_6$  is L, A, I, or nor-leucine (Nle).

4. The anti-inflammatory compound of claim 1, wherein  $n$  is 1 and  $Y$  is the sequence TA.

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5. The anti-inflammatory compound of claim 1, wherein  $m$  is 1 and  $A$  is the sequence QTE.

6. The anti-inflammatory compound of claim 1, wherein  $X_b$  is a sequence  
 35 selected from the group consisting of TALDWSWLQTE; LDWSWLQTE;  
 TALDWSWL; ALDWSWLQTE; LDWSWLQTE; LDWSWL; TALDWSWLQT;  
 TALDWSWLQ; ALDWSWLQT; LDWSWLQ; LDWSWLQT; ADWSWL;  
 LDWSWA; ADWSWA; LDFSWL; LDYSWL; LDWAWL; LDWEWL;

TAADWSWLQTE; ADWSWLQTE; TAADWSWL; AADWSWLQTE;  
 ADWSWLQTE; ADWSWL; TAADWSWLQT; TAADWSWLQ; AADWSWLQT;  
 ADWSWLQ; ADWSWLQT; ALDWSWAQTE; LDWSWAQTE; TALDWSWA;  
 ALDWSWAQTE; LDWSWAQTE; LDWSWA; TALDWSWAQT; TALDWSWAQ;  
 5 ALDWSWAQT; LDWSWAQ; LDWSWAQT; TAADWSWAQTE; ADWSWAQTE;  
 TAADWSWA; AADWSWAQTE; ADWSWAQTE; ADWSWA; TAADWSWAQT;  
 TAADWSWAQ; AADWSWAQT; ADWSWAQ; ADWSWAQT; TALDFS WLQTE;  
 LDFS WLQTE; TALDFS WL; ALDFS WLQTE; LDFS WLQTE; LDFS WL;  
 TALDFS WLQT; TALDFS WLQ; ALDFS WLQT; LDFS WLQ; LDFS WLQT;  
 10 TALDYS WLQTE; LDYS WLQTE; TALDYS WL; ALDYS WLQTE; LDYS WLQTE;  
 LDYS WL; TALDYS WLQT; TALDYS WLQ; ALDYS WLQT; LDYS WLQ;  
 LDYS WLQT; TALD WAWLQTE; LD WAWLQTE; TALD WAWL; ALD WAWLQTE;  
 LD WAWLQTE; LD WAWL; TALD WAWLQT; TALD WAWLQ; ALD WAWLQT;  
 LD WAWLQ; LD WAWLQT; TALD WEWLQTE; LD WEWLQTE; TALD WEWL;  
 15 ALD WEWLQTE; LD WEWLQTE; LD WEWL; TALD WEWLQT; TALD WEWLQ;  
 ALD WEWLQT; LD WEWLQ; and LD WEWLQT.

7. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> consists of 6-  
 12 amino acid residues.

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8. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> consists of 6-  
 10 amino acid residues.

9. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> comprises at  
 25 least five basic amino acid residues.

10. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> comprises at  
 least five amino acid residues independently selected from L-arginine, D-arginine, L-  
 lysine and D-lysine.

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11. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> is selected  
 from the group consisting of RRMKWKK; YGRKKRRQRRR; ygrkkrrqrrr;  
 YARKARRQARR; yarkarrqarr; YARAARRAARR; yaraarraarr; rrmkwkk, RRRRRR,  
 RRRRRRRR, RRRRRRRR, RRRRRRRRRR, RRRRRRRRRR, RRRRRRRRRRRR, .  
 35 rrrrrr, rrrrrrr, rrrrrrrrr, rrrrrrrrrr, rrrrrrrrrrr, and rrrrrrrrrrrr.

12. An anti-inflammatory compound comprising an amino acid sequence  
 selected from the group consisting of: RRMKWKK TALDWSWLQTE;

rrmkwkkTALDWSWLQTE; YGRKKRRQRRRTALDWSWLQTE;  
 ygrkkrrqrrrTALDWSWLQTE; rrrrrrrTALDWSWLQTE;  
 RRRRRRRRTALDWSWLQTE; YARKARRQARRTALDWSWLQTE;  
 yarkarrqarrTALDWSWLQTE YARAARRAARRTALDWSWLQTE;  
 5 yaraarraarrTALDWSWLQTE YGRKKRRQRRRLDWSWL; ygrkkrrqrrrLDWSWL;  
 RRMKWKKLDWSWL; rrmkwkkLDWSWL; rrrrrrrLDWSWL;  
 YARAARRAARRLDWSWL; yaraarraarrLDWSWL; and RRRRRRRRLDWSWL.

13. An anti-inflammatory compound having a structure selected from the  
 10 group consisting of:

H-RRMKWKKTALDWSWLQTE-NH<sub>2</sub>;

H-YGRKKRRQRRRTALDWSWLQTE-NH<sub>2</sub>;

H-rrrrrrrTALDWSWLQTE-NH<sub>2</sub>;

H-YARKARRQARRTALDWSWLQTE-NH<sub>2</sub>;

15 H-YARAARRAARRTALDWSWLQTE-NH<sub>2</sub>;

H-RRMKWKKLDWSWL-NH<sub>2</sub>;

H-rrmkwkkLDWSWL-NH<sub>2</sub>;

H-rrrrrrrLDWSWL-NH<sub>2</sub>;

H-YARAARRAARRLDWSWL-NH<sub>2</sub>;

20 H-yaraarraarrLDWSWL-NH<sub>2</sub>; and

H-YGRKKRRQRRRLDWSWL- NH<sub>2</sub>.